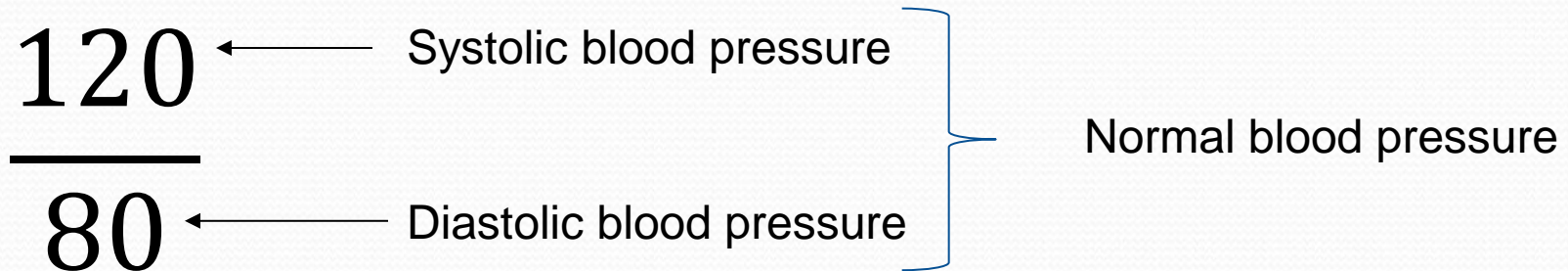


Blood Pressure Lab

- In healthy individuals, diastolic blood pressure stays the same during cardiovascular exercise.
- There are several factors that affect diastolic blood pressure, these include; blood volume, stroke volume and heart rate.
- To meet your muscles' increased oxygen demand, all these factors increase during exercise. To create more space for the increased blood flow during exercise, your arteries dilate so diastolic blood pressure remains the same.

Blood Pressure Lab



- Systolic blood pressure – measures the pressure in your blood vessels when your heart beats
- Diastolic blood pressure – measure the pressure in your blood vessels when your heart is at rest

Lab Results

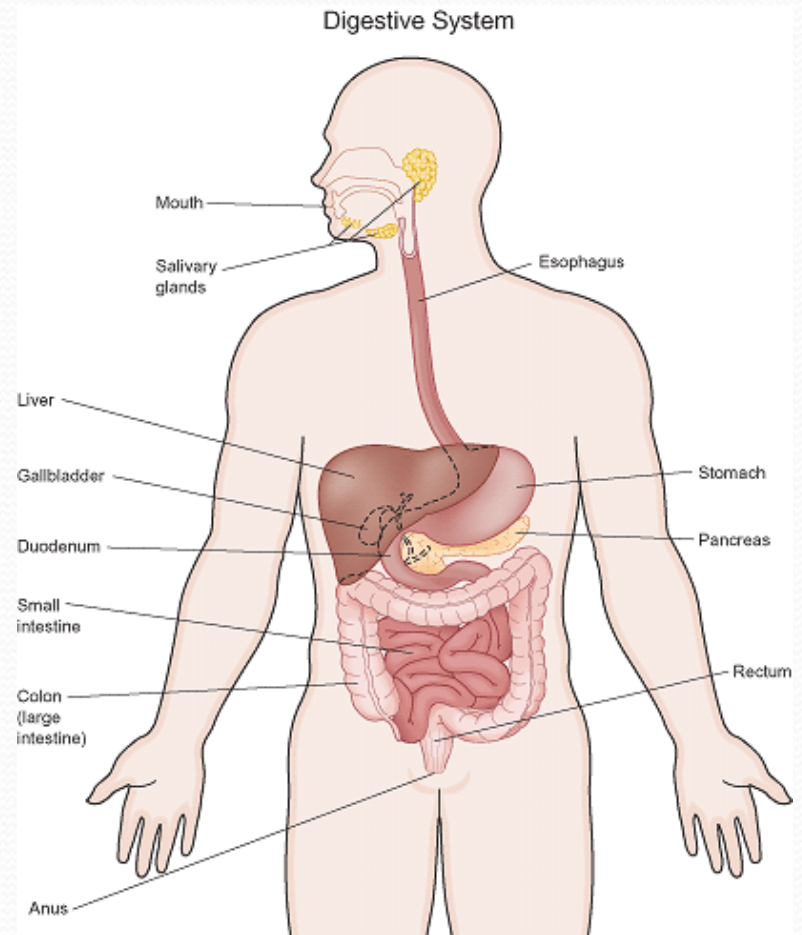
- Teens – resting target → 111 to 128 systolic and 63 to 82 diastolic
- Athletes hearts are stronger and more efficient.
 - Moves more blood per pump (less pumps).
- After exercise heart rate like blood pressure remains high for a bit to replace lost oxygen.
- Body position (heart rate)
 - Lying down –lowest (no gravity – easier to move blood)
 - Sitting and Standing – about the same (pump against gravity)
 - Exercise – increase demand for O₂ (beat more often)
- Exercise increases pulse 20%
- Absolut pulse Max → 200-205 (decreases with age)
 - Smoking decreases the max

The Digestive System



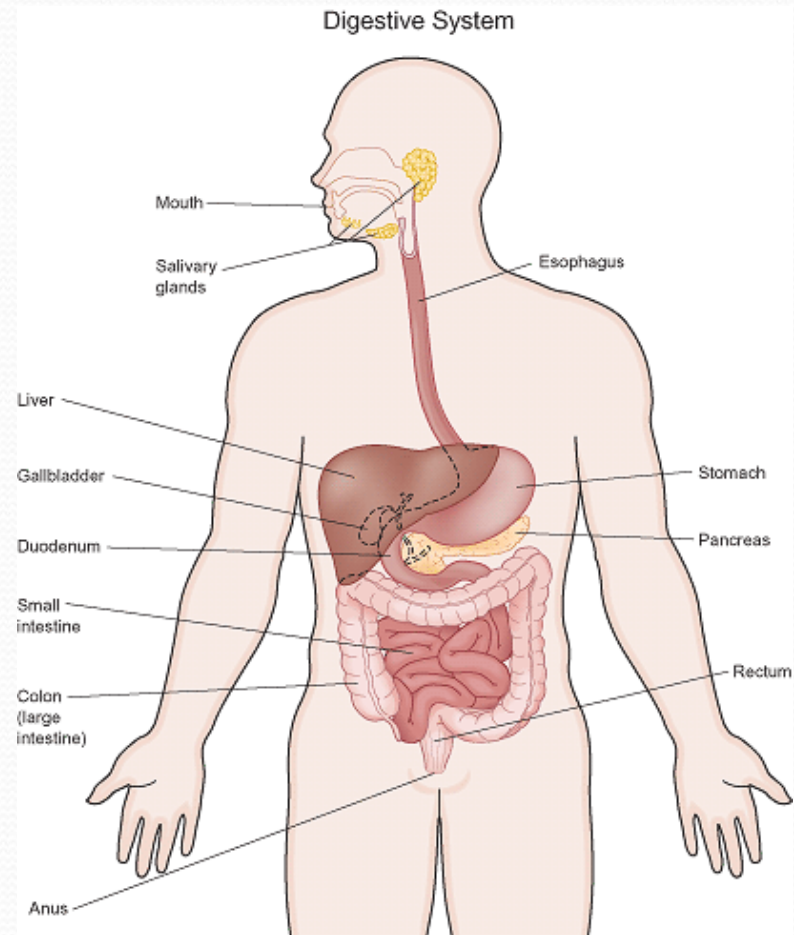
Introduction

- The digestive system is used for breaking down food into nutrients which then pass into the circulatory system and are taken to where they are needed in the body.



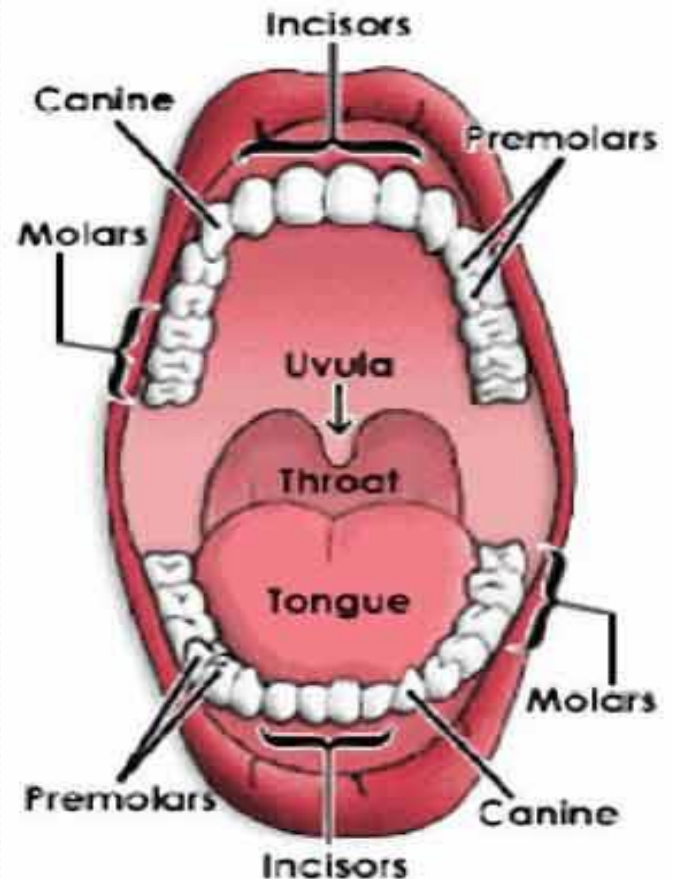
Introduction

- There are four stages to food processing:
 1. **Ingestion**: taking in food
 2. **Digestion**: breaking down food into nutrients
 3. **Absorption**: taking in nutrients by cells
 4. **Egestion**: removing any leftover wastes



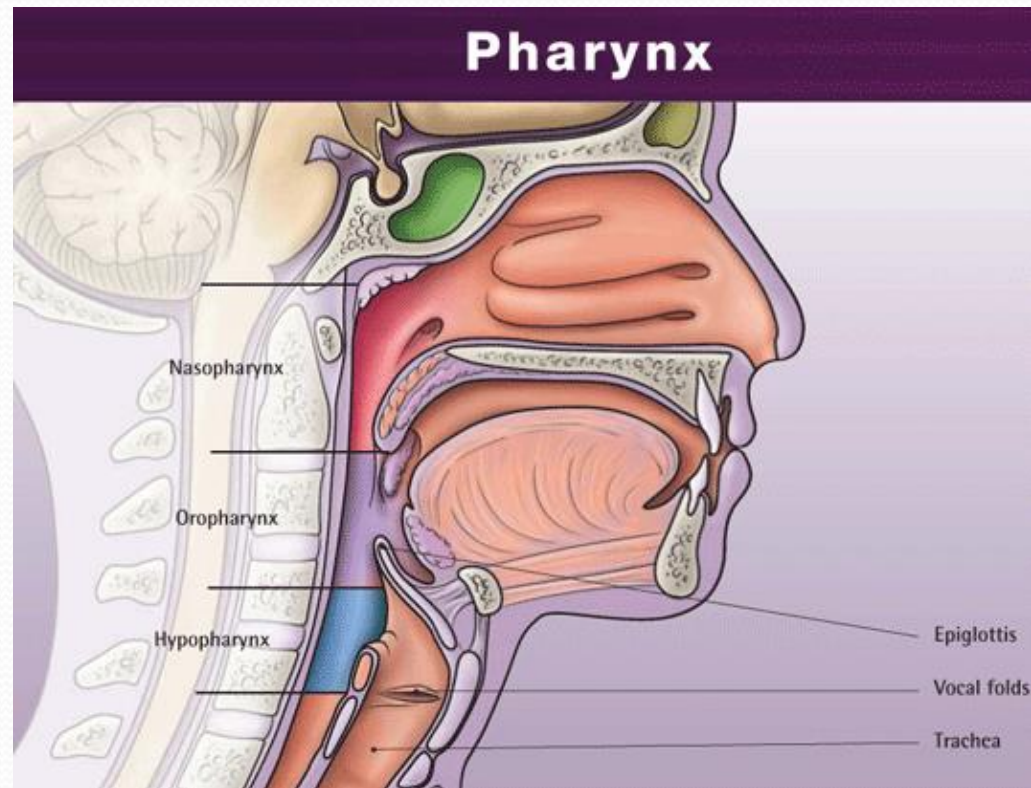
The Human Digestive System

- Begins when food enters the mouth.
- It is **physically** broken down by the **teeth**.
- It is begun to be **chemically** broken down by **amylase**, an enzyme in saliva that breaks down carbohydrates.



The Human Digestive System

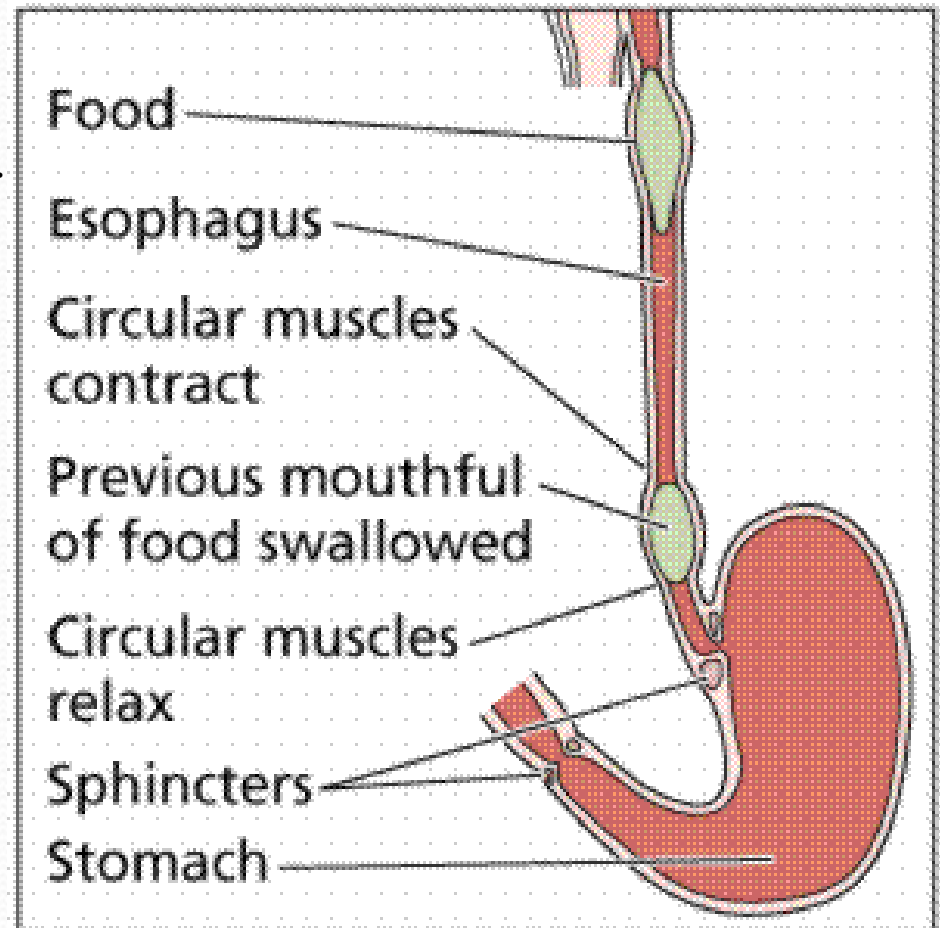
- The tongue moves the food around until it forms a ball called a **bolus**.
- The bolus is passed to the **pharynx** (throat) and the **epiglottis** (ep-i-glot-is) makes sure the bolus passes into the **esophagus** and not down the windpipe!



The Human Digestive System

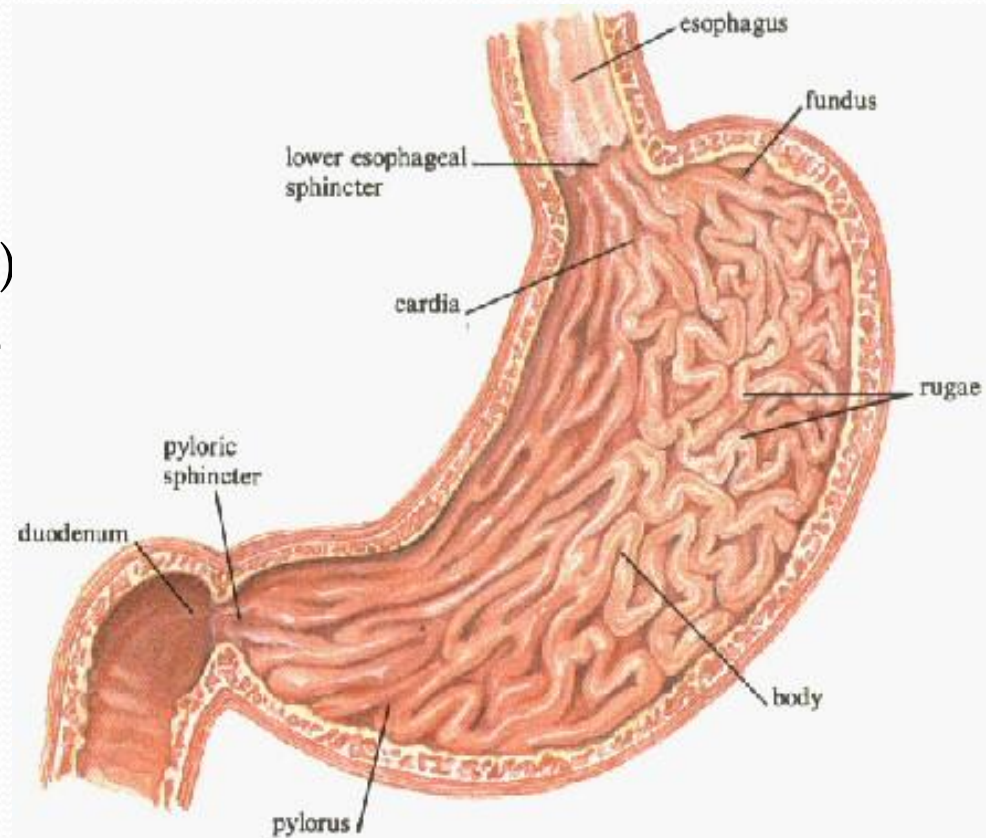
- The bolus passes down the esophagus by **peristalsis** (pair-uh-stall-sis).
- Peristalsis is a wave of muscular contractions that push the bolus down towards the stomach.

Peristalsis



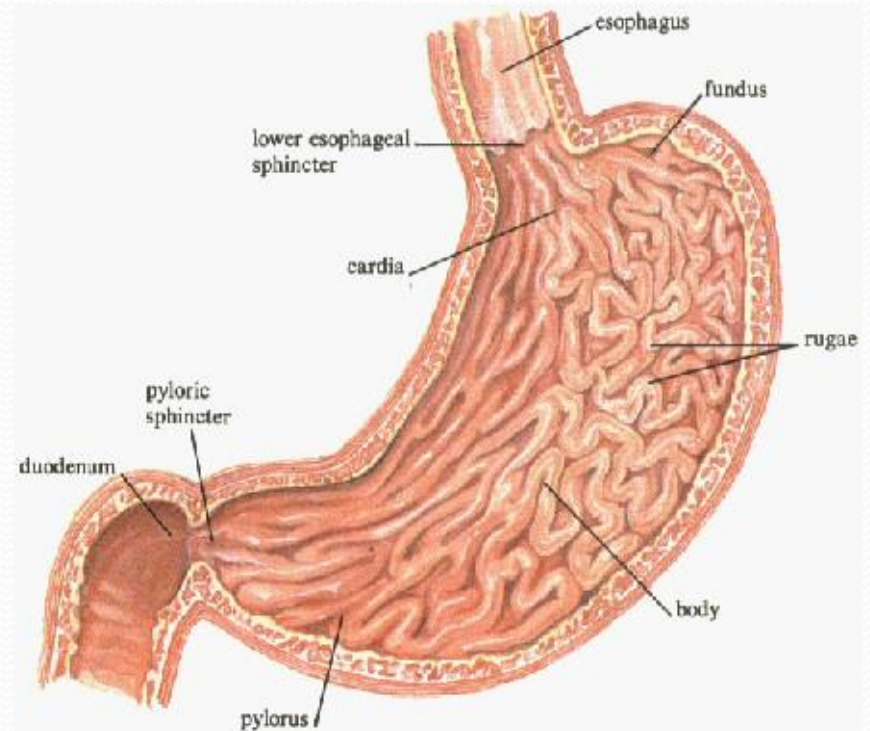
The Human Digestive System

- To enter the stomach, the bolus must pass through the **lower esophageal sphincter** (ih-sof-uh-jee-al) **sphincter**, a tight muscle that keeps stomach acid out of the esophagus.



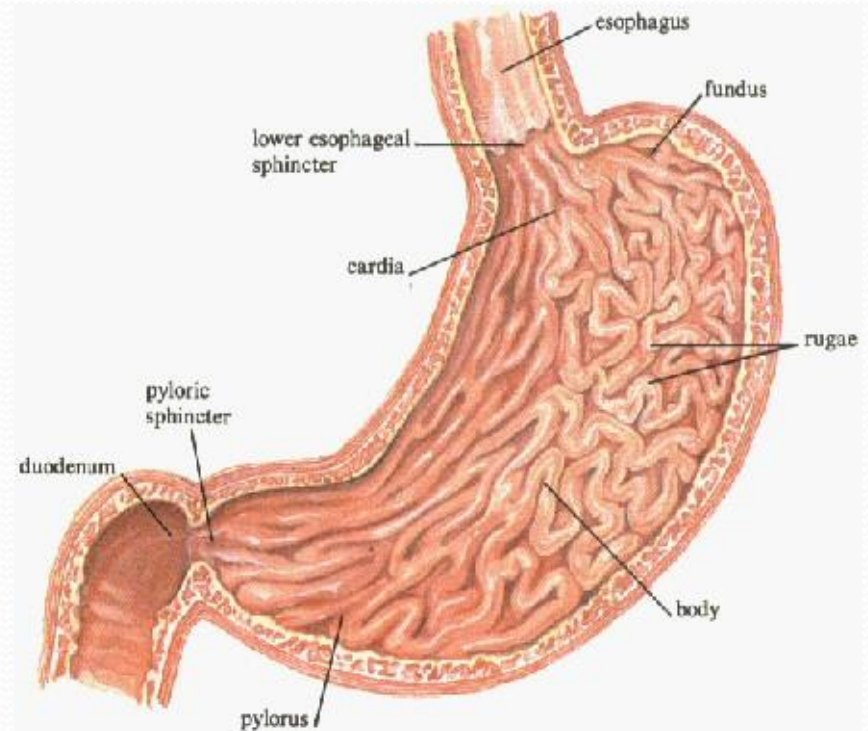
The Human Digestive System

- The stomach has folds called **rugae** (rew-gee) and is a big muscular pouch which churns the bolus (**Physical Digestion**) and mixes it with **gastric juice**, a mixture of stomach acid, mucus and enzymes.



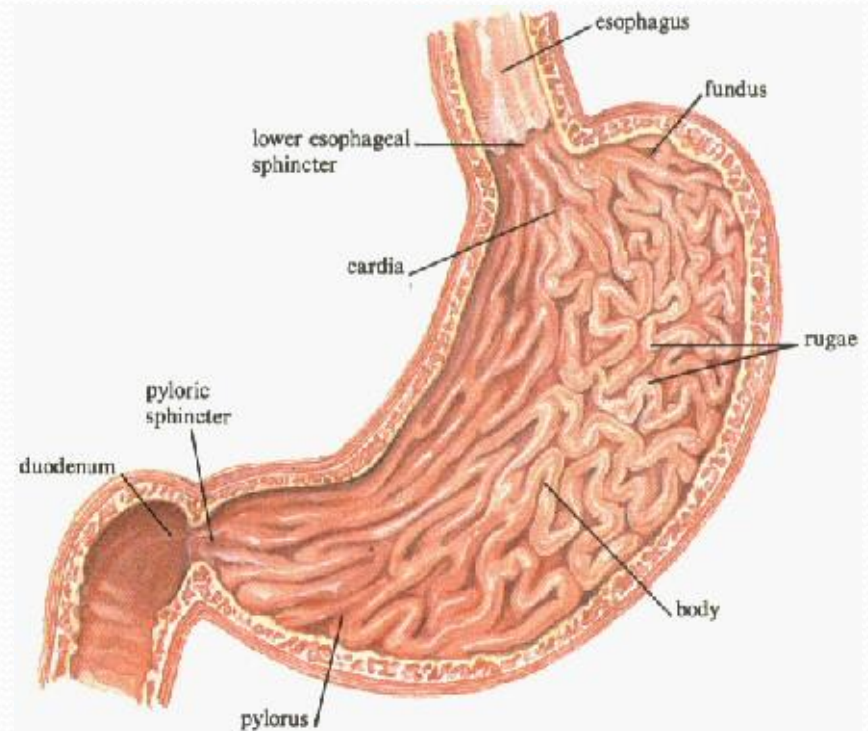
The Human Digestive System

- The **acid** kills off any invading bacteria or viruses.
- The **enzymes** help break down proteins and lipids. **Chemical Digestion.**
- The **mucus** protects the lining of the stomach from being eaten away by the acid.



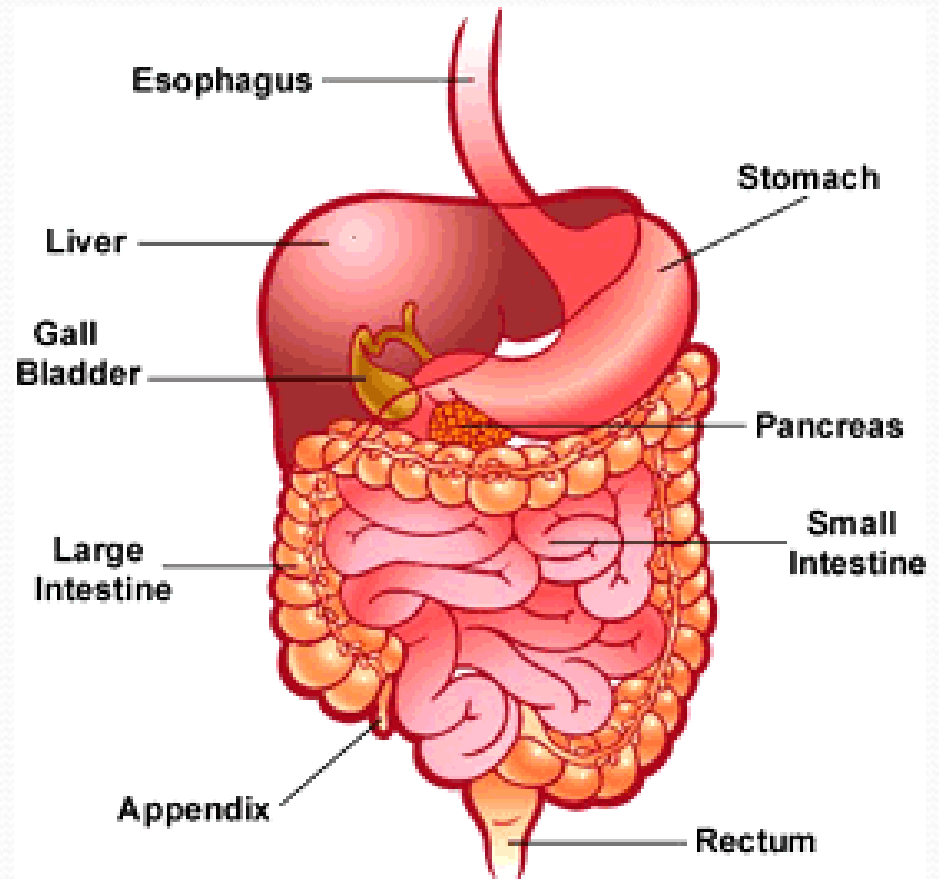
The Human Digestive System

- The stomach does do some absorption too.
- Some medicines (i.e. aspirin), water and alcohol are all absorbed through the stomach.
- The digested bolus is now called **chyme** and it leaves the stomach by passing through the **pyloric** (pie-lor-ic) **sphincter**.



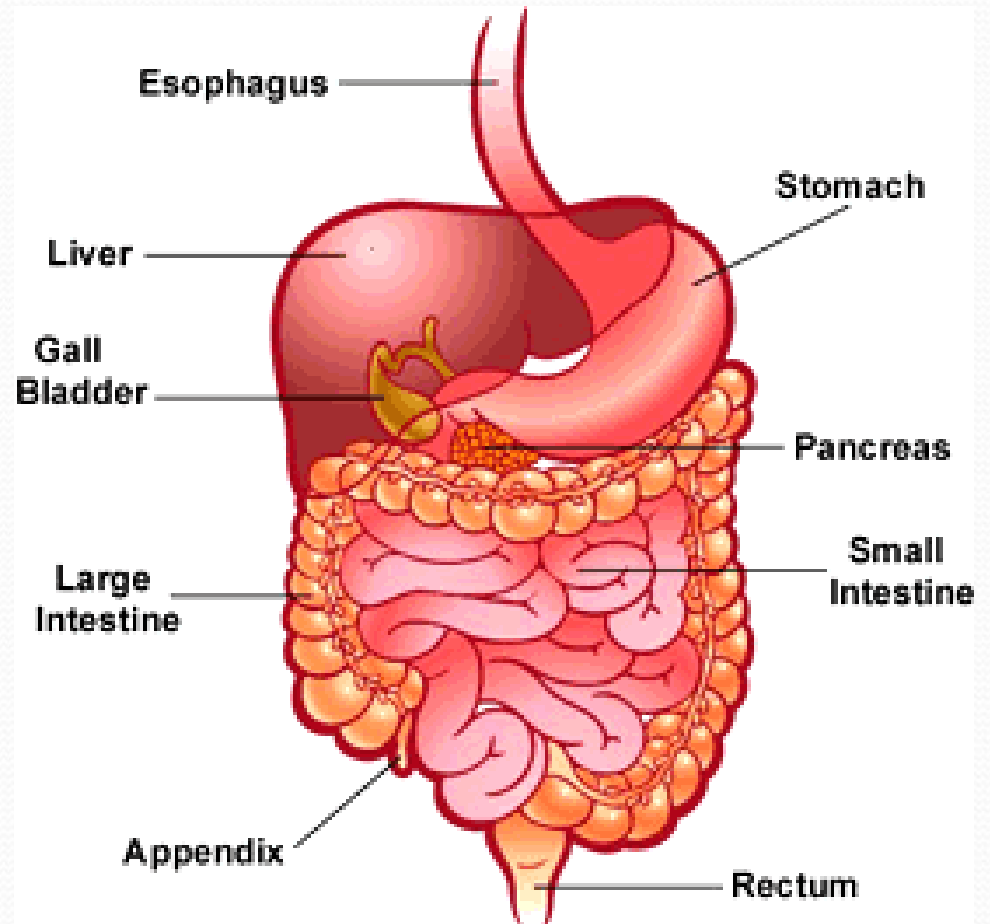
The Human Digestive System

- Chyme is now in the **small intestine**.
- The majority of absorption occurs here.
- The liver and pancreas help the small intestine to maximize absorption.
- The small intestine is broken down into three parts:



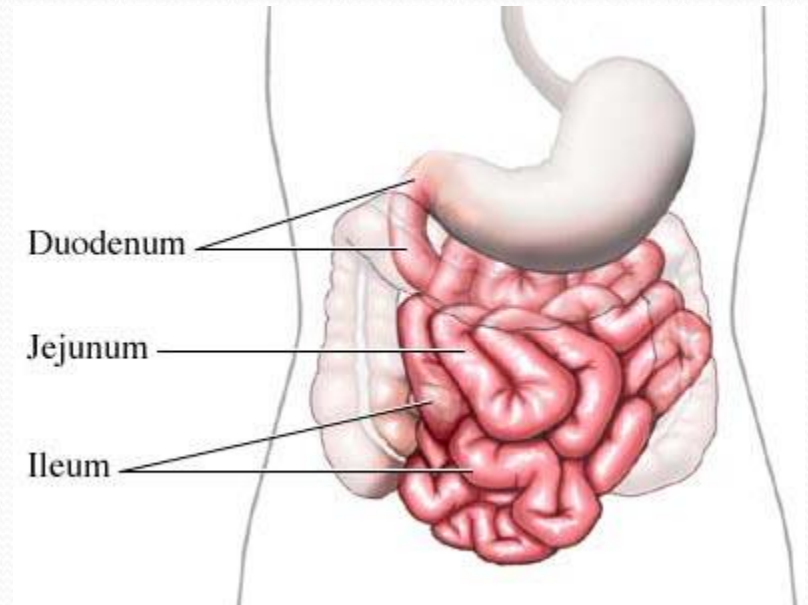
The Human Digestive System

1. **Duodenum**
 - **Bile**, produced in the **liver** but stored in the **gall bladder**, enters through the **bile duct**. It breaks down fats.
 - The **pancreas** secretes **pancreatic juice** to reduce the acidity of the chyme.



The Human Digestive System

2. **Jejunum** (ji-joo-nuh m)
- The jejunum is where the majority of absorption takes place.
 - It has tiny fingerlike projections called **villi** lining it, which increase the surface area for absorbing nutrients.



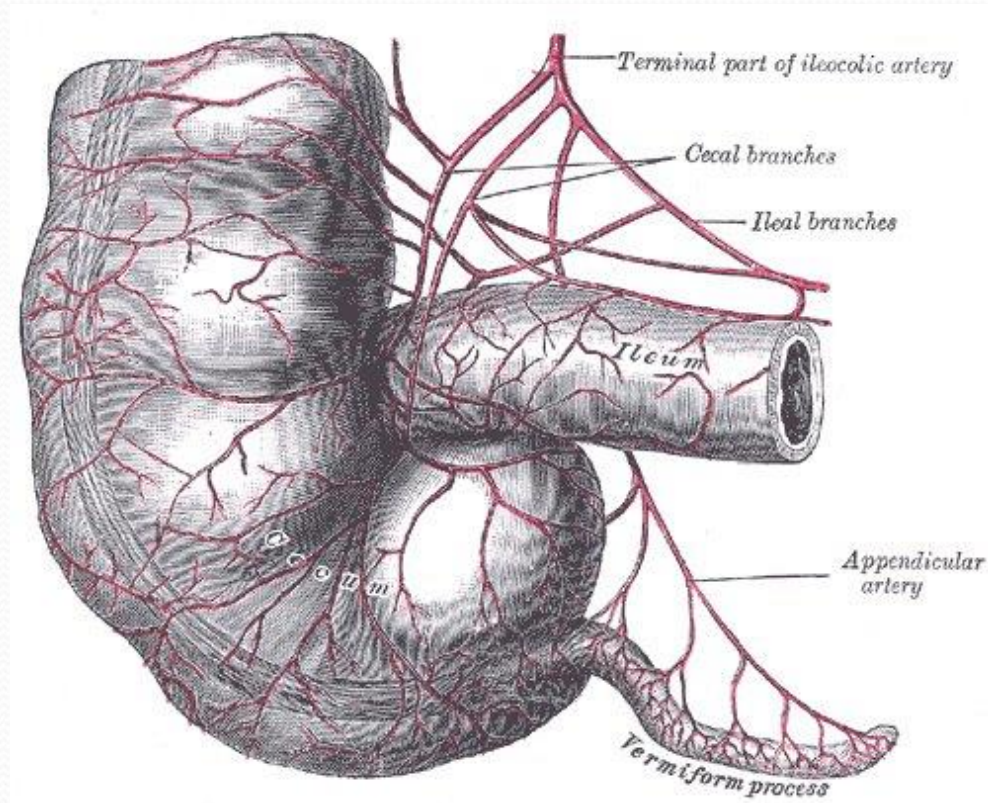
The Human Digestive System

- Each villi itself has tiny fingerlike projections called **microvilli**, which further increase the surface area for absorption.



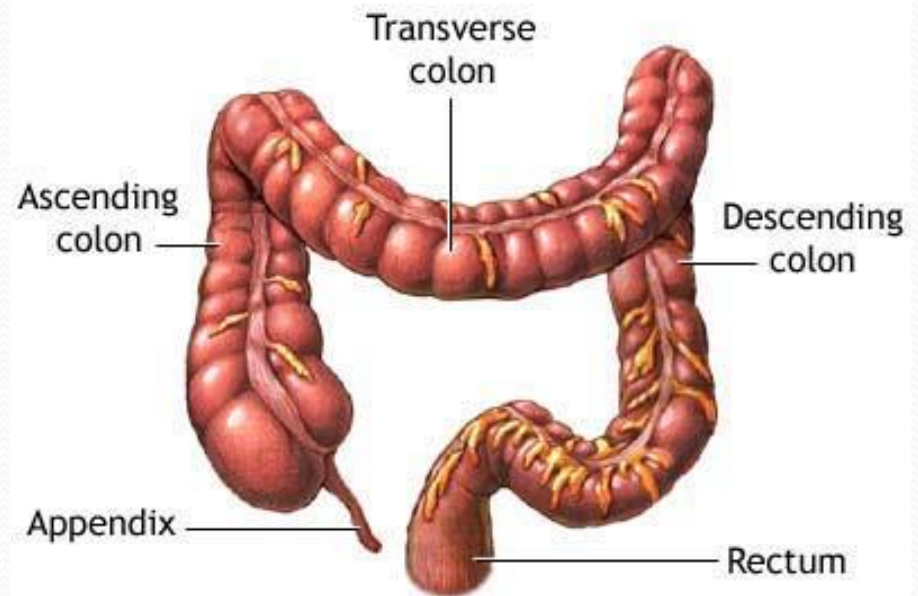
The Human Digestive System

3. **Ileum** (il-ee-uh m)
- The last portion of the small intestine is the **ileum**, which has fewer villi and basically compacts the leftovers to pass through the **caecum** (see-kuh m) into the **large intestine**.



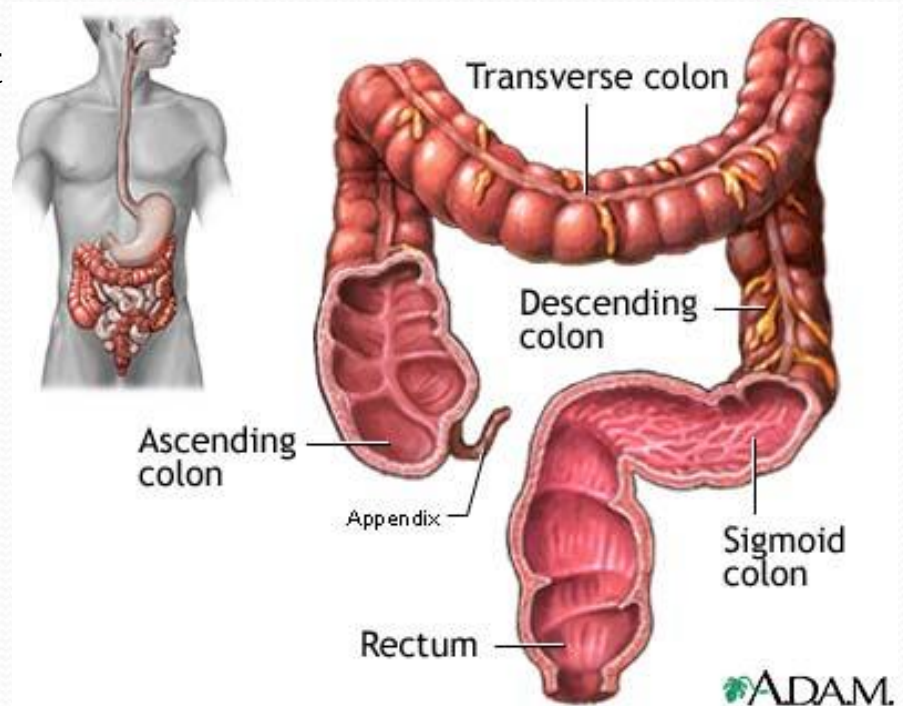
The Human Digestive System

- The **large intestine** (or **colon**) is used to **absorb water** from the waste material leftover and to produce **vitamin K** and some **B vitamins** using the helpful bacteria that live here.



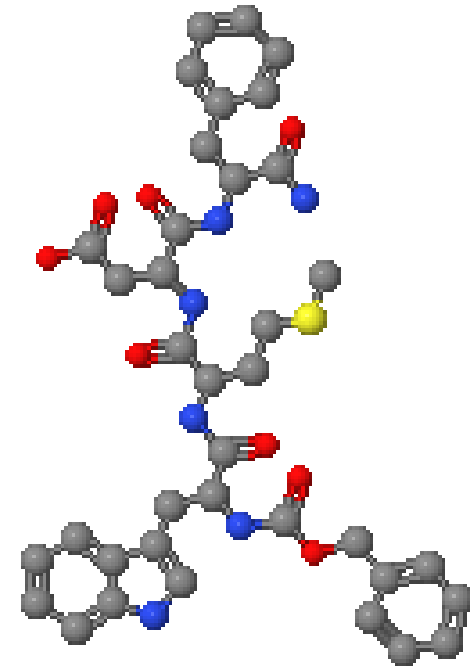
The Human Digestive System

- All leftover waste is compacted and stored at the end of the large intestine called the **rectum**.
- When full, the **anal sphincter** loosens and the waste, called **feces**, passes out of the body through the **anus**.



Digestion and Homeostasis

- The endocrine, nervous, digestive and circulatory systems all work together to control digestion.
- Before we eat, smelling food releases **saliva** in our mouths and **gastrin** in our stomachs which prepares the body for a snack.



The Hormone Gastrin

Digestion and Homeostasis

- A large meal activates receptors that churn the stomach and empty it faster.
- If the meal was high in fat, digestion is slowed, allowing time for the fat to be broken down.
- Hence why we feel fuller after eating a high fat meal.

